REMARKS

The rejection of Claims 16 and 18 as being unpatentable over Ohta et al in view of both Morisawa and Ibamoto et al under 35 U.S.C. § 103(a) is traversed. Reconsideration is requested on grounds that the rejection is based upon impermissible hindsight, absent which there is no prima facie case of obviousness based upon substantial record evidence.

The claimed invention relates to a vehicle control in which a vehicle is operated selectively in a first running mode or a second running mode. The first running mode represents a normal drive mode which controls a vehicle (specifically, an engine torque) in accordance with the amount that the operator depresses the accelerator pedal. The second mode represents an automatic drive mode such as a cruise control (i.e., a constant vehicle speed control) or a constant headway distance control.

The first target value of the first running mode is determined on the basis of a depressed accelerator pedal stroke. The second target value of the second running mode is determined from environmental operating conditions which exist ahead of the running vehicle. The driver can change the running mode by operating a mode-changing switch (changeover switch) SW. Applicants recognized that when the vehicle changes from the first running mode (automatic drive mode), the target value sometimes changes considerably, so that the driving torque, the driving force, engine torque or the acceleration/deceleration rate are changed. A large change of the target value causes a heavy and undesirable shock in the vehicle.

In order to avoid heavy vehicle shocks with a change from the first running mode to the second running mode, Applicants discovered that if the change of target value exceeds a threshold value, the actual target value of the first running mode gradually approaches the second running mode. Claim 16 specifies that the target and control parameter is "a driving force" of the vehicle. Claims 18 and 24 specify that the target and control parameter is an acceleration/deceleration rate of the vehicle. Claims 20, 22 and 26 specify that the target and control parameter is a driving shaft torque of the vehicle. Claim 28 specifies that the target and control parameter is an engine torque.

None of the cited references, singly or in hypothetical combination, recognized the solution to the heavy shock problem that was discovered by the Applicants herein. The Office Action acknowledges that the Ohta et al patent does not mention a driving force of the claimed type and impliedly concedes the same with regard to the Kuroiwa et al document relied upon in the rejection of Claims 20 and 22.

More specifically, however, the Ohta et al patent discloses a vehicle control system having a drive mode estimating device in which variables including a maximum rate of increase of operation amount of a drive force, a maximum deceleration of the vehicle in braking and a coasting run time of the vehicle are calculated, the calculated variables are inputted to a neural network. The drive mode is estimated on the basis of the output of the neural network. The neural network approach is a totally different one from that taken by the present invention. One of skill in this art looking to solve the problem of heavy shocks in

a conventional system of the type described by Applicants would not have looked to Ohta et al for a solution.

Nor would that person of ordinary skill found a solution in Morisawa and Ibamoto et al. Morisawa discloses only a control system for automatic transmission having plural running modes such as a plurality of gear shift schedules. A driving route to the destination is set in the navigation device. The suitable running mode is chosen based on the driving route. Assuming, therefore, that Ohta et al and Morisawa would have been combinable without impermissible hindsight (Applicants submit that such hindsight has been used), the resulting hypothetical combination would not have yielded a control method such that, at the change from the first running mode to the second running mode, if the change of target value exceeds a threshold value, the actual target value of the first running mode gradually approaches the second running mode so as to avoid a heavy shock.

Nor would the hypothetical produce that result if arguably combinable with Ibamoto et al which teaches the use of a single control mode. The engine torque in the Ibamoto et al control method is controlled so as to minimize the deviation between an actual engine torque and a target engine torque. There is no teaching or suggestion in the Ibamoto et al patent of a vehicle capable of a normal drive mode (first running mode) and an automatic drive mode (second running mode). Taken together, therefore, the three cited documents do not establish a prima facie cause of obviousness.

For the foregoing reasons, particularly with regard to Ibamoto et al, the rejection of Claims 20 and 22 as being unpatentable over Kuroiwa et al in view of

Ibamoto et al, the rejection of Claims 17, 19, 21 and 23 as being unpatentable over Ohta et al, Morisawa, Ibamoto et al and Kuroiwa et al in view of Watanabe et al and Onari et al, and the corresponding rejection of apparatus Claims 24-29, all under 35 U.S.C. §103(a) are traversed.

In addition to the foregoing comments, Applicants note that Kuroiwa et al does not teach or suggest suppression of the fluctuations of driving torque, etc. at a change between the first and second running modes and when a deviation between those first and second target values exceeds a predetermined value. This document adds nothing in the way of substantial record evidence to support a case of §103(a) obviousness.

Watanabe et al and Onari et al add little else to the record. Watanabe et al teach the use of an adjusting force which compares a determined target drive force with a determined actual drive force. This approach is intended primarily for CVT transmissions to avoid degradation of drivability during prolonged service periods of the vehicle. Avoiding shock is not the goal of the Watanabe et al system.

The same is true with regard to the adaptive system of Onari et al which is intended to achieve comfortable driving under all vehicle operating conditions and does so by dividing vehicle conditions into a rest condition and a running condition, with the driver's intent being discerned on the basis of six different driver actions. The reliance upon the teachings of Onari et al merely emphasize the use of impermissible hindsight in the rejection. Accordingly, reconsideration of and favorable action upon the claims in this application are earnestly solicited.

If necessary to effect a timely response, this paper should be considered as a petition for an Extension of Time sufficient to effect a timely response, and please charge any deficiency in fees or credit any overpayments to Deposit Account No. 05-1323 (Docket #381AS/44307C2).

Respectfully submitted,

James F. McKeown
Registration No. 25,406

CROWELL & MORING, LLP
Intellectual Property Group
P.O. Box 14300
Washington, DC 20044-4300
Telephone No.: (202) 624-2500
Facsimile No.: (202) 628-8844
JFM:kms
(CAM 56203.218)

VERSION WITH MARKINGS TO SHOW CHANGES MADE TO THE CLAIMS

16. (Amended) A method of controlling a vehicle, wherein when a driving force of the vehicle is changed from a driving force of a first running mode wherein a driving [fore] force of the vehicle is controlled according to a first target value determined from an accelerator pedal position to a driving force of a second running mode wherein a driving force of the vehicle is controlled according to a second target value determined from an environmental operating conditions ahead of said vehicle, if a difference between the driving force of said first running mode and the driving force of said second running mode exceeds a predetermined value, the driving force of the vehicle is controlled to be gradually approached to said driving force of the second running mode.